INFORMATION REPORT INFORMATION REPORT

50X1-HUM

CENTRAL INTELLIGENCE AGENCY

SECRET

COUNTRY East Germany

REPORT

SUBJECT The Dresden Radio Plant

50X1-HUM

DATE DISTR. 15 MAY 1962

NO. PAGES 35

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S-E-C-R-E-T

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S-E-C-R-E-T

General.

1. The Dresden Radio Plant (VEB Funkwerk Dresden) was one of the most important electronics plants in East Germany. Until 1956, it concentrated on radar development, including an acquisition radar in the 10-centimeter range; after that date, it worked mostly on mobile radios of all types, mostly in the ultra-high-frequency range. The establishment consisted of four plants (Werke), numbered 1, 2, 3, and 4, of which Plant 2 operated as a development center. It was in Dresden at Grossenheimerstrasse 2; the other plants, which handled production, were in the industrial area on Meschwitzstrasse in Dresden.

2. The plant employed less than 2000 workers, of whom about 400 were assigned to development, including about 20 engineers with degrees (Dipl. Ing.) and about 80 trade-school engineers, more than 60 technicians, 100 laboratory assistants, 30 designers, and about 50 draftsmen. [redacted] 50X1-HUM [redacted] their work was inferior to that of the development center, as everywhere in East Germany, because most of 50X1-HUM the good graduate engineers tended to enter development work, where equipment was more lavish and political pressure much less strenuous than in production. The annual turnover of the plant was about 40 million DME, of which, in 1960, about four million was devoted to development and only about 500,000 DME was for military production. The plant had the usual difficulties in procuring materials and personnel and experienced all the other obstacles posed by the cumbersome administration of a planned economy.

Organization.

3. The plant organization was headed by a director, (fnu) Tietze (see Attachment A for a chart). Directly under him were the usual administrative offices:

a. Quality Control, headed by Ing. Karl Dennecke.

b. Labor Union (BGL).

c. Party Secretariat, headed by (fnu) Wuestmann.

d. Plant Police (Betriebsschutz), numbering 15 to 20.

e. Patent Office, headed by (fnu) Boehme.

f. Standardization Office, headed by Walter Hessel.

g. Commercial Management, headed by (fnu) Graafe.

h. Personnel Department, headed by Mrs. (fnu) Froeba.

i. Labor Department, headed by (fnu) Neumann.

4. The operation of the plant was under a technical director, (fnu) Herre. Work was divided into two sectors, development and production. The production sector, with its three plants, was handled by Production Management, headed by Walter Klengel, and included a test field. The development sector was headed by a chief, Professor Werner Kutzsche, assisted by a secretary, Miss Waltraut Walther. Under him were the following:

[redacted] 50X1-HUM

a. Laboratory Management (TKE). The position of chief was vacant. There were 10 laboratories under the section:

(1) Special Projects (TKE-1), headed by Heinz Morawa.

(2) Mobile Radios (TKE-2), headed by [redacted] 50X1-HUM
[redacted] Dipl. Ing. Manfred Koehler. 50X1-HUM

(3) Characteristic Curve Tracer (TKE-3), headed by Dipl. Ing. Hans Berthold.

(4) Impulse Equipment (TKE-4), headed by Ing. Heinz Winkler.

(5) Noise Detectors (TKE-5), headed by Werner Haensch.

(6) Material Testing Instruments (TKE-6), headed by Walter Kaule.

(7) Computer Technology (TKE-7), headed by Ing. (fnu) Horn.

(8) Antennas (TKE-8), headed by Wolfgang Seefried.

(9) Chemical Laboratory (TKE-9), headed by Erhardt Kutzsche.

(10) Basic Research Laboratory (TKE-10), headed by Dipl. Ing. (fnu) Siebert.

b. Development Planning, headed by Waltraut Walther.

c. Technical Library, headed by Mrs. (fnu) Schultz.

d. Design Management (TKK), headed by Walter Deck.

e. Experimental Construction (TKV), headed by a foreman, Erich Ruedinger.

5. The Development Branch was relatively well equipped and had a capacity for development above its performance. A computer project was initiated in 1959 and the computer, built in cooperation with Professor N. Joachim Lehmann of Dresden Technical University, was available in 1959. The computer, installed in two rooms on the ground floor of the Development Branch, was an electronic digital type for, probably, 27 figures. It consisted of three parts: the memory rack, the control panel, and the power supply; P-2000 tubes, manufactured by the tube plant of the Erfurt Radio Plant (VEB Funkwerk Erfurt), and memory drums were used. Three or four persons worked with the computer. [redacted] it might have been used for military purposes [redacted] Not only the Dresden Radio Plant used it, but also Dresden Technical University, the aircraft industry plants until they were closed in spring 1961, and the Atomic Research Center at Rossendorf.

Development Work. 50X1-HUM
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6. The major work under development at the plant, to be manufactured there, up to the end of 1964 were:

	1962 I II III IV	1963 I II III IV	1964 I II III IV
a. Mobile radio, 10 watts, one-meter band, 10 channels, phase modulated, 235-328.6 megacycles	UeK-8	UeK-9.UeK-11/Series production.	
b. Mobile radio, 15 watts, two-meter band, 10 channels, phase modulated, 156-174 megacycles.	Series production, about 200 items.		
c. Mobile radio, 15 watts, four-meter band, 10 channels, 70-87.5 megacycles; for the People's Police, 75-77 megacycles.	Pilot production, about 10 items.		
d. Mobile radio, 15 watts, 10-meter band, six channels, 31.7-41 megacycles, phase modulated.	UeK-9.UeK-11/Series production.		
e. Seaborne voice radio, 15 watts, two-meter band, 20 channels, 156-162 megacycles.	UeK-9.UeK-11,/Series production. about 30 items.		
f. Short-range radio link, 156-174 and 235-328.6 megacycles, for the Post Office.	UeK-8.....	UeK-9.UeK-11/Series production.	
g. Short-range radio link, 235-328.6 megacycles, for the Power Administration.	UeK-8.....	UeK-9.UeK-11/Series production.	
h. Mine safety alarm installation, KO-58/8, 34.4 megacycles.	Production, 10 transmitters, 450 receivers.		
i. Fixed four-meter intallation, 15/100 watts, simplex operation, 70-87.5 megacycles.	K-5...short series.	UeK-6.....UeK-8	
j. SED alert systems.	Series production.		
k. Public radio for ports and coastal communications, 156-162 megacycles.	Drawing board./K-1..K-2	K-3..K-5	
l. Public agricultural radio, 156-174 megacycles.		Drawing board./K..K-2	
m. Mobile radio, 10 watts, transistorized (Valvo OC169 and OC170).	Drawing board./K-1.K-5/UeK-6..UeK-8		

		1962 I II III IV	1963 I II III IV	1964 I II III IV
n.	Portable transceiver, two- and four-meter band, fully transistorized.	K-1....K-5	UeK-6.UeK-8	UeK-9.UeK-11
o.	Commercial power plug-in instrument for portable voice radio.	UeK-9.UeK-11/Series production.		
p.	Special transverter for power supply of portable radios.	UeK-9.UeK-11/Series production.		
q.	Command voice radio, 31.7-41 megacycles, phase modulated, made by the Special Project Section.	UeK-6.UeK-8	UeK-9.UeK-11/Series production.	
r.	Physician call radio, amplitude modulated, made by the Special Project Section.	K-1....K-2	K-3....K-5	UeK-6..UeK-8

Specific Projects.

7. Panoramic Receiver. Under contract for the East German Post Office, the plant began development in the latter part of 1960 or the beginning of 1961 on a panoramic receiver, in the Noise Detector Laboratory (TKE-5). The work, under the direction of Haensch and two others, was to be completed about 1963. In 1961, the equipment had not yet received a type assignment, but two types were probably to be developed, to cover the complete broadcast band up to 220-250 megacycles. A normal television picture tube was probably to be used to show the frequency spectrum. The equipment was not to be transistorized and, because of the small number ordered, was not to contain printed circuits. The project was not handled as secret, although the equipment was to have direction-finding capabilities.

8. Since East Germany had no specialized domestically-made equipment (and probably none at all) for audio surveillance, [redacted] such work was done with standard radio receivers. The only equipment at the plant besides the panoramic receiver suitable for even very rough direction-finding was the STG-4, operating on a frequency range of 30 to 240 megacycles, using five to eight channels. It was designed to locate sources of disturbing electrical radiation, such as electric motors, oscillators, and other sources of electrical noise, and could be used for reading non-precision direction finding. In 1961, 100 items were manufactured, and the equipment was scheduled for display at the Leipzig Fair in March 1962. 50X1-HUM

9. Radio Equipment for the East German Mining Administration. The equipment included the following:

a. KO-01/6, a 10-watt frequency-modulated transceiver with a frequency range of 235 to 328.6 megacycles. It was not transistorized but used tubes made by the Berlin Telecommunications Plant (VEB Werk fuer Fernmeldewesen, Berlin-Oberschoeneweide) and the Erfurt Radio Plant. There was no requirement for teletype connection. The range of the set was tested at

five to 80 kilometers, depending on the terrain. The development was in two stages, for simplex operation, which was completed, and for duplex operation, which was cancelled in stage K-6. A test line, location unknown, was in operation, but all procurement of the equipment was stopped in September 1960 because the East German Railroads (Deutsche Reichsbahn), which had ordered the development, had no more funds. The set was displayed at the 1960 Leipzig Fair.

b. KO-45/8 and KO-67/8, which had identical block diagrams and were similar to the KO-01/6. The frequency range was chosen because there was no room for it in the two-meter band, and not to coincide with U.S. Army radio sets. Television and radar took up the two and three-meter bands entirely, and no radio in East Germany used the one-meter band.

c. KO-58/8, mine safety alarm installation (Grubenalarmanlage). The Mine Administration ordered 10 transmitters and 400 to 500 receivers. The pilot production began in 1961 and deliveries were expected to begin in 1962. The equipment could be used for civil defense, which operated in the 34.4 megacycle range with an alternate frequency of 34.1 megacycles. [redacted] it had nothing in common with the Fu 0.25, was not associated with it, and was not intended to replace it. 50X1-HUM

d. KO-70/9, a power supply unit designed for mining equipment and carried on the lower part of the back. It consisted of nickel cadmium cells, weighed about three kilograms, and had a life of about five operating hours. It was in its final design stage.

10. In March 1961, all projects in the mining radio field were cancelled with the possible exception of the KO-58/8, whose fate was still in doubt in mid-1961. Under the auspices of Section 9 of CEMA, negotiations were under way for Poland to take over the development; the negotiators were Johann Lautenbach, development chief of the Koepenick Radio Plant (VEB Funkwerk Koepenick) and Horst (?) Jahn of Poland. It was understood that the work was probably to be taken over by a plant at Katowice. A Polish set similar to those developed at Dresden was displayed at the Leipzig Fair in spring 1961. 50X1-HUM

11. Mobile Railroad Communications Equipment. [redacted] The railroad equipment was designed for use in several forms, such as installation in vehicles or trailers, but its main purpose was for railroad shunting and mobile communications. About 1000 sets, for example, were provided in agricultural trailers for use on collective farms, but in the experience of plant officials most of them went to waste because of improper storage and handling by persons not accustomed to relatively delicate electronic equipment. The main equipment was manufactured from 1954-1955; production was to stop about 1963-1964.

12. The equipment consisted of a transmitter, a receiver, and a power supply, with a control panel (see Attachment B), and could be encased in either a standard or a dust-proof rack.

a. Transmitter. The quartz-stabilized transmitter was 270 by 165 by 105 millimeters, weighed about 3.2 kilograms, and was mounted on a nickel-plated frame (see Attachment C). It worked on the principle of zero-phase angle modulation, had a frequency traverse of six kilocycles to 1000 cycles modulation frequency, and had a voice band width of 300 to

3000 cycles. The frequency range was 31.7-40.1 and 70-87.5 megacycles, with a frequency deviation of 1 x 10^{-4}. There were three operating frequencies, quartz-stabilized, switchable at intervals of 100 kilocycles, and frequency multiplexing was 12-fold. The frequency constant was 2.5 x 10^{-4} by -10 to +40 degrees centigrade. The transmitter used one LV 3 tube with an output capacity of 10 watts at 60 ohms and as additional tubes one ECH 81, one EF 96, one 6AC7, and two ECC 91.

b. Receiver. The receiver was 270 by 165 by 148 millimeters, weighed about 4.2 kilograms, and was mounted on a nickel-plated frame. In operation it used the principle of superimposed connection. By sixfold multiplexing of the basic frequency generated in the quartz stage, it produced an intermediate frequency of 3.1 megacycles after mixing with the input frequency. The amplitude limitation was achieved in two stages; a phase discriminator served for demodulation. The frequency range was 31.7-40.1 and 70-87.5 megacycles, with a sensitivity at 20 decibels noise level and a six-cycle traverse of one microvolt. The three operating frequencies were quartz stabilized and switchable at intervals of 100 kilocycles, with separation precision at the interval of ≧ 9.3 N. The frequency deviation was 1 x 10^{-4} and the frequency constant 2.5 x 10^{-4} at -10 to +40 degrees centigrade. The output power in the range of 300 to 3000 cycles at eight kilocycle variances was 1.5 watts. The tubes used were two EF 80, two EF 85, four EF 96, one EABC 80, one EL 11, one EAA 91, and one ECH-81.

c. Power supply. The unit was 300 by 250 by 175 millimeters and was mounted on a nickel-plated frame. It supplied the current necessary for operation of the receiver and the transmitter; the transformer and rectifier part took care of the regular supply. The battery power supply, which had the same dimensions and appearance, contained a single-anchor converter, which produced alternating current, rectified after transformation to appropriate anode voltage by dry-plate rectifiers. Power for the tubes and the necessary relay voltages came directly from the battery. The power supply also contained a signal generator for the call sign. In the mobile version of the set, the power supply unit reloaded the battery or floated it during operation. Fixed stations could also be operated by batteries in case of a power breakdown.

d. Control panel. The control panel for fixed stations assembled in one unit all elements, including transmission, reception, supervision, and exchange. A hand instrument could be added for operation in noisy surroundings, and a pedal switch was available. The mobile control panel was equipped with a loudspeaker and a hand set, and the on-off switch was provided with a lock to protect it from unauthorized use.

e. Loudspeaker. A pressure-chamber loudspeaker was developed for use on locomotives, dredges, and similar equipment and could be encased against dust and humidity. It had a three-watt capacity and also served as a microphone.

13. Portable Ultra-Shortwave Radio, 0.2 and One Watt. The Leipzig Radio Plant began manufacturing a portable ultra-shortwave transceiver in 1959, when there was a pilot production of four or five sets. In 1960, the plant made about 100 sets, and source thought about 200 might have been built in 1961. The equipment offered good mobility and flexibility and could be used as additional equipment with other four-meter-band radios made earlier by the plant. It was essentially for civilian use but could be applied in any type

of military or police vehicle, although the military had never showed any interest in it. It could be netted with other stations of the four-meter band after appropriate tuning. In a simplex operation network, the radio functioned like another station and was capable of establishing communication with other stations in the network, using only one channel. In duplex operation, where there were two separate frequencies, the portable station could communicate only with the central station, not with the others in the network. The transceiver could also be connected with a regular telephone net if the proper equipment were available at the central station.

14. The transceiver and the power supply were in two separate containers, which permitted adjustment to various conditions in the choice of 0.2 or one-watt transmission output. With 0.2 watt, battery operation was six and a half hours, of which 60 percent was considered transmission. When a one-watt power supply was used, the transmitter performance was increased, but the length of operation was reduced to five and a half hours and the weight of the equipment was somewhat greater. The batteries consisted of six nickel-cadmium cells, for 0.2 watt, and seven cells for one watt. The dimensions of the two types of power supply were:

Size	Height	Width	Depth	Weight
With 0.2 watt	262 mm.	216 mm.	142 mm.	About 8 kilograms.
With 1 watt	262 mm.	216 mm.	162 mm.	About 9 kilograms.

15. A cable handset was provided. Straps for carrying the equipment were attached in such a way that both parts could be carried on the back or the power supply could be carried on the back and the transceiver on the chest. The set was equipped with a telescopic $\lambda/4$ antenna, and had provision for connection of a tubular antenna and, if necessary, collapsible antennas with 60-ohm wave resistance. The technical data on the set were as follows (see Attachment D for a diagram):

a. Frequency range 70-87.5 megacycles, with tolerances in the temperature range of -20 to +40 degrees centigrade, $\pm 5 \times 10^{-5}$.

b. Maximum of three channels, quartz stabilized, separated by 50-kilocycle intervals, with phase modulation.

c. High-frequency input and output, 60-ohm coaxial.

d. Receiver sensitivity better than 1.5 microvolts, selection at 35 kilocycles mistuning $\geq$ 60 decibels, and receiver radiation = 30 microvolts per meter.

16. Mobile Radio Installations. The plant manufactured four mobile radios, prepared and developed for possible use by the Ministry of National Defense and the Ministry of Interior (the first four items in the list of developments, above). The Ministry of Interior contact man for supervision of the projects was Captain (fnu) Zickert, who also supervised the work on the SED alert systems and the public radio for ports and coastal communications. The radios were for use in any vehicle, for public utilities, and for the police or the fire department. There were two power levels, 10 and 15 watts, and two channel groups, 10 and six. The 15-watt mobile radio with 10 channels in the four-meter band had a specified frequency range for use by the People's Police.

17. Characteristics for the two power levels were:

	10 watts	15 watts
Frequency range:	235-328.6 megacycles	31.7-41 megacycles
	1-meter band	10-meter band
Modulation:	Phase-modulated F3	Phase-modulated F3
Frequency traverse at 3000 cycles:	± 10-12 kilocycles	± 10 kilocycles
Frequency tolerance:	$\pm 2.5 \times 10^{-5}$	$\pm 2.5 \times 10^{-5}$
Operating temperature range:	-10 to +40 degrees C.	-10 to +50 degrees C.
Channels, maximum:	10	6
Channel separation:	100 kilocycles	50 kilocycles
Switching width:	900 kilocycles	250 kilocycles
High-frequency input and output:	60 ohm-	60 ohm-
Modus operandi:	Simplex, duplex	Simplex, duplex, and simplex-duplex
Low-frequency transmission range:	300-3000 cycles	300-3000 cycles
Call frequencies (for both):	1750 cycles and if required 2135 cycles	
Transmitter	About 10 watts	15 watts
Preemphasis up to one kilocycle:	6 decibels	6 decibels
Loudspeaker amplifier:	Unusable	Low frequency, 6 watts
Tubes:	Three ECC 81 Two EF 80 One ECH 81 Two EL 83 Two SRS 4452	Two EEE 81 Two EF 80 One RCH 81 One EL 95 One EL 83 One SRS 4451
Receiver		
Sensitivity to 20 decibel noise level and six-cycle traverse:	1 microvolt	0.8 microvolt
Short distance selectivity 80 decibels at Δf:	± 80 kilocycles	± 40 kilocycles

Mirror-wave selection:	70 decibels	70 decibels
Low-frequency power output at 5.5 kilocycle and 1000 cycles:	1.5 watts	1.5 watts
Noise suppressor adjustment for high-frequency input voltage:	1-30 microvolts	0.5-20 microvolts
Tubes:	One EC 92 One ECF 82 Four EF 80 Two EF 89 One EABC 80 One EL 84 One ECH 81 One ECC 85	Two EC 92 Two ECF 82 Four EF 80 Two EF 89 One EABC 80 One EL 84

18. Ultra-High-Frequency Voice Radio in the Two- and Four-Meter Bands. For commercial use the plant manufactured two-meter and four-meter ultra-high-frequency phase-modulated radios, the first operating in the 156-174 megacycle range, the second in the 68-87.5 megacycle range. The channel intervals were 50 kilocycles, the maximum number of channels 10, the frequency variation a maximum of $\pm$ 15 kilocycles, and the frequency precision, from -20 to +50 degrees centigrade $\pm 10^{-5} \times 2$. The low-frequency range was 300-3000 cycles. The radios could be used for duplex, simplex, or half-duplex operation and could operate on either commercial power or battery. They were all equipped with accessories such as various antennas, intercommunication installations, and flashing light alarms. All equipment corresponded in specifications to the Hague Convention of January 1957 and to German Post Office standards. It was available for export through the East German Domestic and Foreign Trade Office (Deutscher Innen- und Aussenhandel) (DIA).

19. The radio consisted of the following:

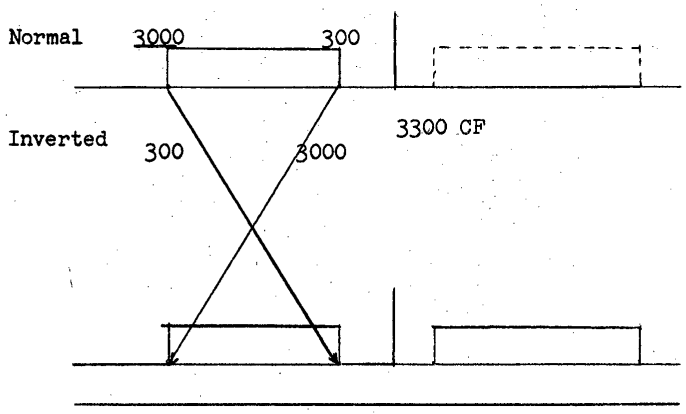
a. Transmitter, built so that it could be used as a power amplifier in connection with a six-watt pressure-chamber speaker. The power was about 15 watts. The harmonic attenuation was $\geq$ 60 decibels, the intermediate attenuation $\geq$ 70 decibels, and the adjustment resistance 60 ohms, not symmetrical. The maximum frequency variation was 15 kilocycles, with modulation harmonic distortion at 1000 cycles $\geq$ five percent. The input gain at 600 ohms was about 200 millivolts, the power amplification N $\geq$ 6 watts at k = 15 percent.

b. Receiver. With the transmitter it weighed 19 kilograms. It had a sensitivity of 20 decibel noise separation, 1000-cycle modulation frequency, and five-kilocycle frequency variation. The harmonic distortion at 1000 cycles and five-kilocycle frequency variation was $\geq$ five percent. The high-frequency input voltage for a constant output capacity was 0.5 microvolts to 50 millivolts. The receiver radiation was $\leq$ 30 microvolts per meter.

c. Power supply, weighing 30 kilograms. It could be used for both simplex and duplex operations.

d. Control box, weighing three kilograms, with loudspeaker and cables.

20. Scrambler Radio. In 1958-1959, the Mobile Radio Section (TKE-2), under source's direction, attempted to develop a scrambler transmitter and radio for use in railroad communications. The principle was that the transmitter generated a carrier frequency on 3.3 kilocycles with 300-3000 kilocycles modulated. There were two side bands; when only the lower side was transmitted, scrambling occurred, and the procedure was reversed in the receiver. On the other side band, CF was amplified. Transmission would have been unintelligible only to a person with an untrained ear; source insisted that the system was not worthy of even the name of scrambler. None of the information ever left the plant, and the project was abandoned. Its system is shown below.



21. Antennas. The Antenna Laboratory (TKE-8) developed antennas, since the plant made all the antennas for its radios. No ferrite antennas were used with the ultra-high-frequency equipment. The antennas at the plant (see Attachment E for drawings) included the following (* indicates those on which development had been completed or which were in production):

a. Antennas for the 9-10 meter band, 31.7-41 megacycles.

(1) $\lambda/2$ antennas, vertical polarization, for 20-watt* and 100-watt* output.

(2) $\lambda/4$ vehicle antennas, vertical polarization.*

b. Antennas in the four-meter band, 68-87.5 megacycles.

(1) Circular radiation pattern antennas.

(a) Vertical polarization, including $\lambda/4$ vehicle antennas,* $\lambda/4$ antennas for vans, $\lambda/2$ antennas,* and $\lambda/4$ abbreviated locomotive antennas.

(b) Horizontal polarization.

(c) Stacked-ring dipole antenna.*

(2) Directional antennas.

(a) Vertical polarization, corner reflector antenna with $\lambda/2$

emitter, with directional lobe or cardiodide characteristics, and λ/2 twin-emitter with 8. characteristics.

(b) Horizontal polarization, corner reflector antennas and Yagi antennas of the folding type* and for stationary use.*

c. Antennas for the two-meter band, 156-174 megacycles.

(1) Circular radiation pattern antennas.

(a) Vertical polarization, including λ/4 vehicle antennas, λ/4 locomotive antennas, λ/2 20-100 watt antennas, and λ/4 radial counterbalance antennas.

(b) Horizontal polarization, with twin-V emitter.

(2) Directional emitter.

(a) Vertical polarization, corner reflector antennas.

(b) Horizontal polarization, corner reflector antennas and Yagi antennas.

d. Antennas for the one-meter band, 235-328.6 megacycles.

(1) Antennas with circular radiation pattern.

(a) Vertical polarization, including λ/4 vehicle antennas and λ/2 antennas for an output of 20-100 watts.

(b) Horizontal polarization, twin-V emitter antenna.

(2) Directional emitter antennas.

(a) Vertical polarization, twin Yagi antennas.

(b) Horizontal polarization, Yagi antennas, folding and fixed.

22. Measuring Instruments. Among the measuring instruments made at the plant were:

a. The FOG 1-6 Series. The equipment was designed to detect breakdowns on high-voltage power lines up to 100 kilovolts (Fehlerortungsgeraet). It was portable, about three feet by two feet by 10 inches. The FOG 1-4 had been in production for many years; about 10 to 20 items were manufactured annually. FOG 5 and 6 breakdown detectors were to replace them in 1962. The new sets were to take higher voltages into consideration and were to detect power line breakdowns at a distance of up to 200 kilometers by means of reflection measurements.

b. Various ultrasonic equipment for testing materials.

c. Field-strength measuring instruments. About 10 to 20 items were manufactured annually.

Activities of the Special Project Section.

23. The Special Project Section (TKE-1) was established in 1953-1954 to handle developments for military use, but it also worked on some civilian projects. It was originally given two rooms on the first floor of the development building and later occupied three more rooms. The area was restricted and could be entered only by persons employed there; the doors were always kept closed. [redacted] 50X1-HUM [redacted] all the military material and papers were kept in locked rooms 50X1-HUM or safes. From its beginning, the section had six engineers and technicians and four mechanics, headed by Heinz Morawa.

24. Micromodule Technology. The section was responsible for work in the field of micromodule technology, which source believed was in a very elementary stage. All the work was guided entirely by American technical literature. The plan was to set up components on small ceramic platelets made by VEB Hescho in Hermsdorf. Morawa was doing the work himself but in summer 1961 was expected to receive some technically qualified assistants. The project was research, not connected with any specific piece of equipment. [redacted] [redacted] in 1960 [redacted] an unidentified American transistorized portable transceiver with miniature compo- 50X1-HUM nents which had been procured by undercover means. 50X1-HUM

25. No Soviet military or civilian personnel ever visited the section to in- 50X1-HUM spect the project, but [redacted] the Soviet authorities were interested in it and maintained a liaison through the East German Ministry of 50X1-HUM National Defense. [redacted] the USSR had no micromodule technology of its own and in space exploration was using equipment with standard circuits, perhaps printed, and no micromodule technology or integrated devices. In East Germany, the Dresden Radio Plant was supposed to be working in close cooperation with the Institute of Semiconductors in Berlin-Teltow. The plant, the institute, and Hescho were the only East German organizations working in the field; certainly no such work was being done at Dresden Technical University.

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26. There was a working group concerned with micromodule technology [redacted] [redacted] Both the group and its 50X1-HUM proceedings were classified secret. The field was considered a priority because of its primary application for military purposes. [redacted] the possession of components would not be enough and that it would take a 50X1-HUM long time to obtain the necessary hardware. [redacted] no real pro- 50X1-HUM gress had been made and [redacted] nothing tangible was likely to resul 50X1-HUM before 1964-1965 and then it would be only samples.

27. Fu 0.25. The section developed a military portable transceiver, carried on the chest. It was 240 by 400 by 50 millimeters, weighed at least six kilograms, and used an $\lambda/4$ frame and a Kulikov antenna about 120 centimeters long when fully extended (see Attachment F). No remote control was provided, but a special accessory was available for use in armored vehicles, consisting of a helmet with a built-in speaker and microphone. There was also a combined handset with a push button and a microphone directly on the unit and a built-in microphone and speaker; it probably cut out the microphone when it was plugged in. The speaker and accessories were metal and the unit was mounted on a rain-proof metal frame.

28. The transceiver offered 50 or 100 channels, one quartz-stabilized, the rest free swinging; the quartz crystal was interchangeable. It could be locked on one present channel. It used a 1.2-volt nickel cadmium battery with a six-volt transverter for generation of an anode voltage of 120 or 140 volts. It contained subminiature tubes, the 5678 and 6397 from Telefunken and their equivalents made by the Neuhaus Radio Plant (VEB Funkwerk Neuhaus), probably 15 to 20 in all [redacted] There was only one transistor, a Valvo OC 16 power transistor (see Attachment G). The frequency range was around 45 megacycles. When tested by troops in the field and given range tests by the plant, the transceiver gave a range of five to 10 kilometers.

50X1-HUM

29. The set was the protagonist in a dramatic incident: in 1959-1960 (fnu) Schroettke, chief of the Testing Section, was arrested with his family carrying plans and blueprints of the radio on a Berlin-bound train. The first units of the radio were manufactured in the last months of 1960 and it entered series production in the first months of 1961. 50X1-HUM

30. Pu 0.25. The Pu 0.25 was a test set , associated with the Fu 0.25; [redacted] it was probably a signal generator emitting a certain test fr50X1-HUM quency but was not sure of its exact implication. Morawa himself worked on it. Series production was to have started during the last three months of 1961, but no instruments had been issued as of August 1961, except that one or two had been sent to East Berlin for military testing. The Fu 0.25 and the Pu 0.25 were the only projects of the section which had achieved any results; other projects had been started but had been abandoned incomplete.

31. GO-6. In 1956, the section developed a "portable" transceiver with the possible designation GO-6 (source was not sure of the letters). About 100 units were built, but the project was abandoned because the set proved too large and too heavy. It was never introduced anywhere as operational equipment.

Miscellaneous.

50X1-HUM

32. The Dresden Radio Plant never supplied any radio to the East German Railroad ferry from Sassnitz to Trelleborg [redacted]

33. The plant did no work on light or infrared modulation. [redacted] the possibility of use of such modulation betwe50X1-HUM East and West Berlin [redacted] The plant did no work on parametric amplifiers or centimeter bands and made no coding devices. [redacted] Professor Franz Lange at Rostock University was working on correlation theory, probably the development of correlation distinguishing signal from noise at a ratio of one to one.

50X1-HUM

Radio Transmission and Reception Working Circle. 50X1-HUM

34. The Radio Transmission and Reception Working Circle member, met about once every six months The topics discussed were the developments described above. The working circle had the following members: 50X1-HUM

a. Heinz Schaarschmidt, chairman, a neutral representative.

b. (fnu) Newarla, in charge of communications for the River and Maritime Administration, including lake and port installations.

c. (fnu) Straschewski, Technical Writing Department.

d. (fnu) Polz and (fnu) Werner, long-distance communications equipment, both wire and radio.

e. Zickert, Ministry of Interior.

f. (fnu) Decker, railroad system experimental office.

g. (fnu) Giesecke, Operational Laboratory of Radio and Television (BRF).

h. (fnu) Gaertner, Power Institute.

i. (fnu) Loos, construction office.

j. Fritz Liedtke, Radio and Telecommunications Construction (FFAB).

Personnel. 50X1-HUM

35. data on personnel connected with the Dresden Radio Plant:

50X1-HUM

50X1-HUM

NAME: BERTHOLD, Hans DEGREE OR RANK: Dipl. Ing.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

50X1-HUM

POSITION: Head of the Characteristic Curve Tracer Section (TKE-3) at the Dresden Radio Plant.

NAME: BOEHME (fnu) DEGREE OR RANK: Ing.

50X1-HUM

NATIONALITY: East German

50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Patent Office at the Dresden Radio Plant.

50X1-HUM

50X1-HUM

NAME: DECK, Walter

DEGREE OR RANK:

NATIONALITY: East German

50X1-HUM

OCCUPATIONAL SPECIALTY: Design

POSITION: Head of the Design Management (TKK) at the Dresden Radio Plant.

50X1-HUM

NAME: DENNECKE, Karl

DEGREE OR RANK: Ing.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY: Quality control

POSITION: Head of the Quality Control Section of the Dresden Radio Plant.

50X1-HUM

50X1-HUM

NAME: FROEDA Mrs. (fnu) DEGREE OR RANK:

NATIONALITY: East German DOB: About 1914

OCCUPATIONAL SPECIALTY: Personnel POB:

POSITION: Head of the Personnel Department of the Dresden Radio Plant.

50X1-HUM

NAME: GRAAFE (fnu) DEGREE OR RANK:

NATIONALITY: East German

OCCUPATIONAL SPECIALTY: Commerce

POSITION: Head of the Commercial Management of the Dresden Radio Plant.

50X1-HUM

50X1-HUM

NAME: HAENSCH, Werner DEGREE OR RANK: Ing.

NATIONALITY: East German 50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Noise Detector Laboratory (TKE-5) at the Dresden Radio Plant.

50X1-HUM

NAME: HERRE (fnu) DEGREE OR RANK: Ing.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

POSITION: Technical director of the Dresden Radio Plant. 50X1-HUM

50X1-HUM

NAME: HESSEL, Walter DEGREE OR RANK: Ing.

NATIONALITY: East German 50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Standardization Office at the Dresden Radio Plant.

50X1-HUM

NAME: HORN (fnu) DEGREE OR RANK: Ing.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Computer Technology Laboratory (TKE-7) at the Dresden Radi 50X1-HUM
Plant

50X1-HUM

NAME: KLENGEL, Walter

DEGREE OR RANK:

NATIONALITY: East German

50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Production director of the Dresden Radio Plant.

50X1-HUM

NAME: KOEHLER, Manfred

DEGREE OR RANK: Dipl. Ing.

NATIONALITY: East German

50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Mobile Radio Laboratory (TKE-2) of the Dresden Radio Plant.

50X1-HUM

50X1-HUM

NAME: KUTZSCHE, Werner DEGREE OR RANK: Professor

NATIONALITY: East German 50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Chief of development at the Dresden Radio Plant. 50X1-HUM

NAME: MORAWA, Heinz DEGREE OR RANK:

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

50X1-HUM

POSITION: Head of the Special Project Laboratory (TKE-1) of the Dresden Radio Plant.

50X1-HUM

NAME: SCHULTZ, Mrs. (fnu) DEGREE OR RANK:

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

POSITION: Technical librarian at the Dresden Radio Plant.

50X1-HUM

NAME: SEEFRIED, Wolfgang DEGREE OR RANK: Ing.

NATIONALITY: East German DOB:

OCCUPATIONAL SPECIALTY: Antennas POB:

50X1-HUM

POSITION: Head of the Antenna Laboratory (TKE-8) of the Dresden Radio Plant.

50X1-HUM

NAME: SIEBERT (fnu) DEGREE OR RANK: Dipl. Ing.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

50X1-HUM

POSITION: Head of the Basic Research Laboratory (TKE-10) at the Dresden Radio Plant.

50X1-HUM

NAME: TIETZE (fnu) DEGREE OR RANK: Dipl. Econ.

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

50X1-HUM

POSITION: Director of the Dresden Radio Plant.

50X1-HUM

50X1-HUM

NAME: WALTHER, Waltraut, Miss **DEGREE OR RANK:**

NATIONALITY: East German

OCCUPATIONAL SPECIALTY:

POSITION: Secretary of Professor Werner Kutzsche, development chief at the Dresden Radio Plant and head of the Development Planning Section.

50X1-HUM

NAME: WINKLER, Heinz **DEGREE OR RANK:** Ing.

NATIONALITY: East German

50X1-HUM

OCCUPATIONAL SPECIALTY:

POSITION: Head of the Impulse Equipment Laboratory (TKE-4) at the Dresden Radio Plant.

50X1-HUM

NAME: WUESTMANN (fnu) DEGREE OR RANK:

NATIONALITY: East German

OCCUPATIONAL SPECIALTY: Party work

POSITION: SED secretary at the Dresden Radio Plant.

NAME: ZICKERT (fnu) DEGREE OR RANK: Captain, Ing.

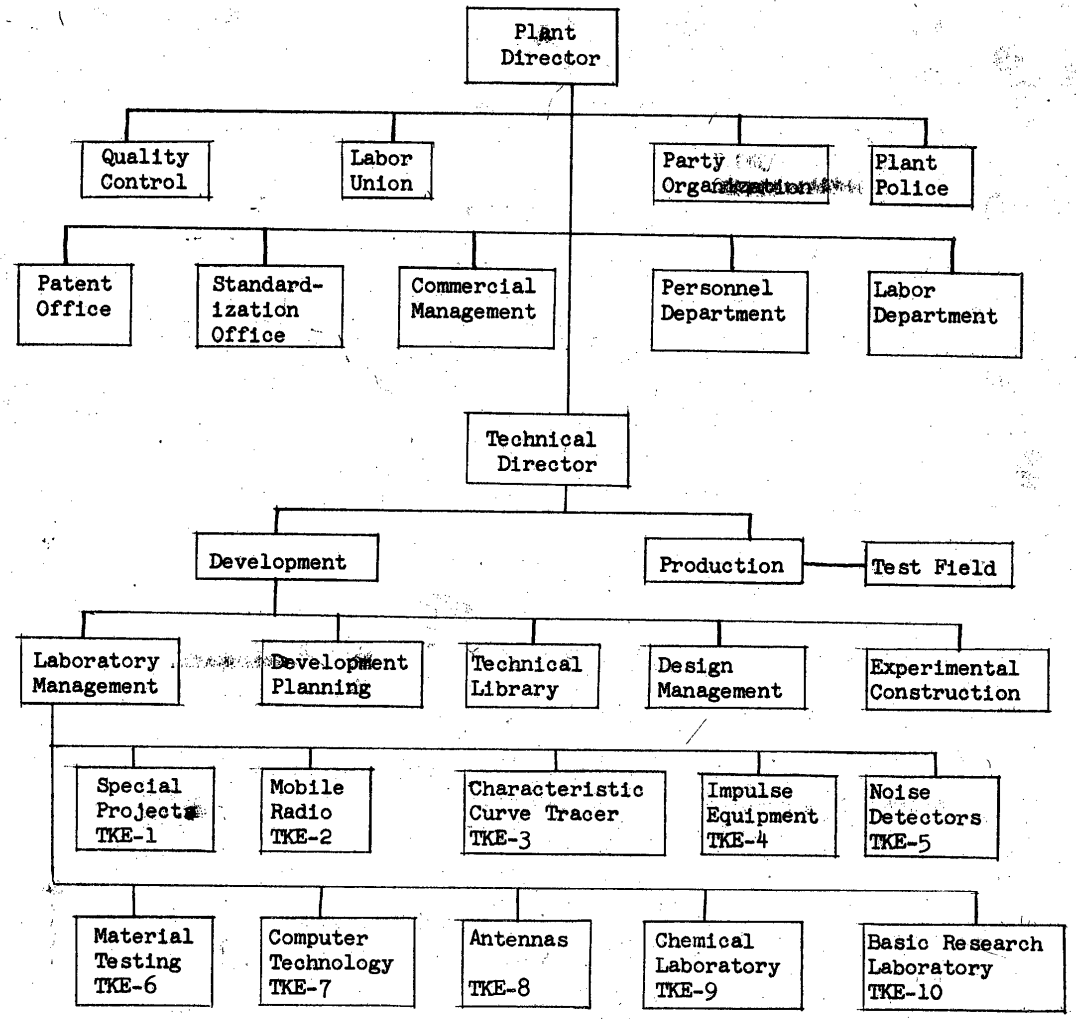
NATIONALITY: East German

OCCUPATIONAL SPECIALTY: Police work

POSITION: Police (Vopo) officer in the Research and Development Department, liaison officer on police contacts at the Dresden Radio Plant.

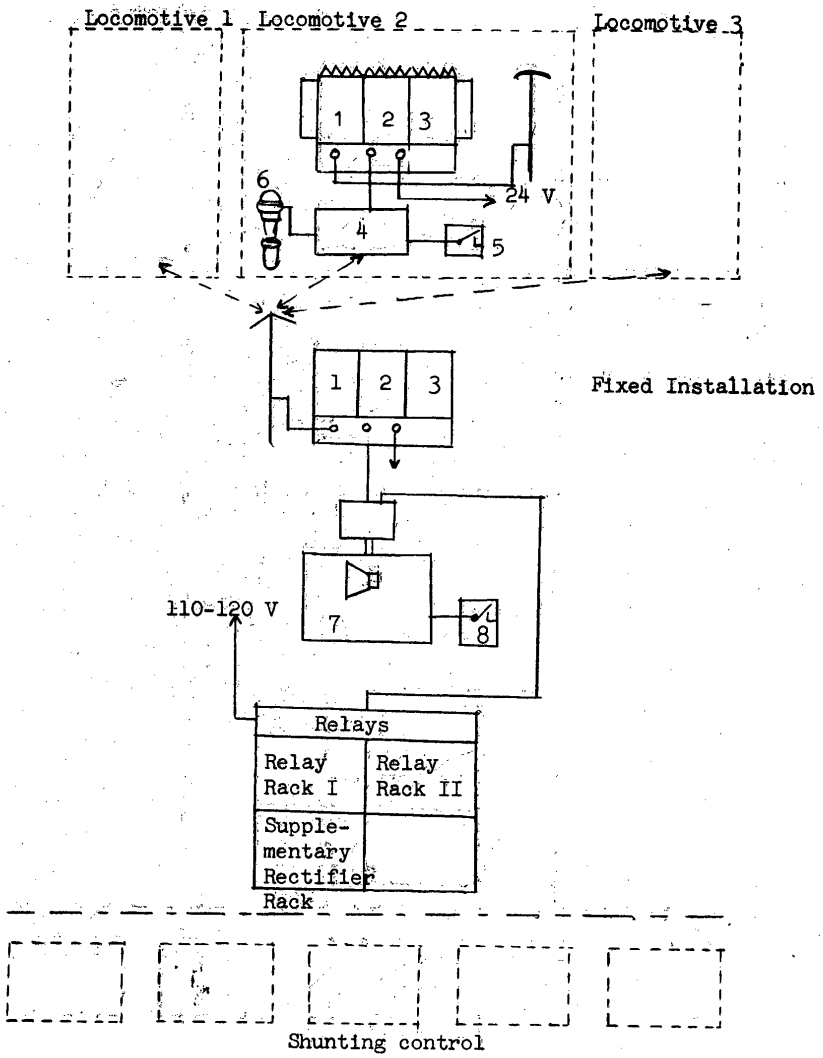
ATTACHMENT A

Organization of the Dresden Radio Plant



ATTACHMENT B

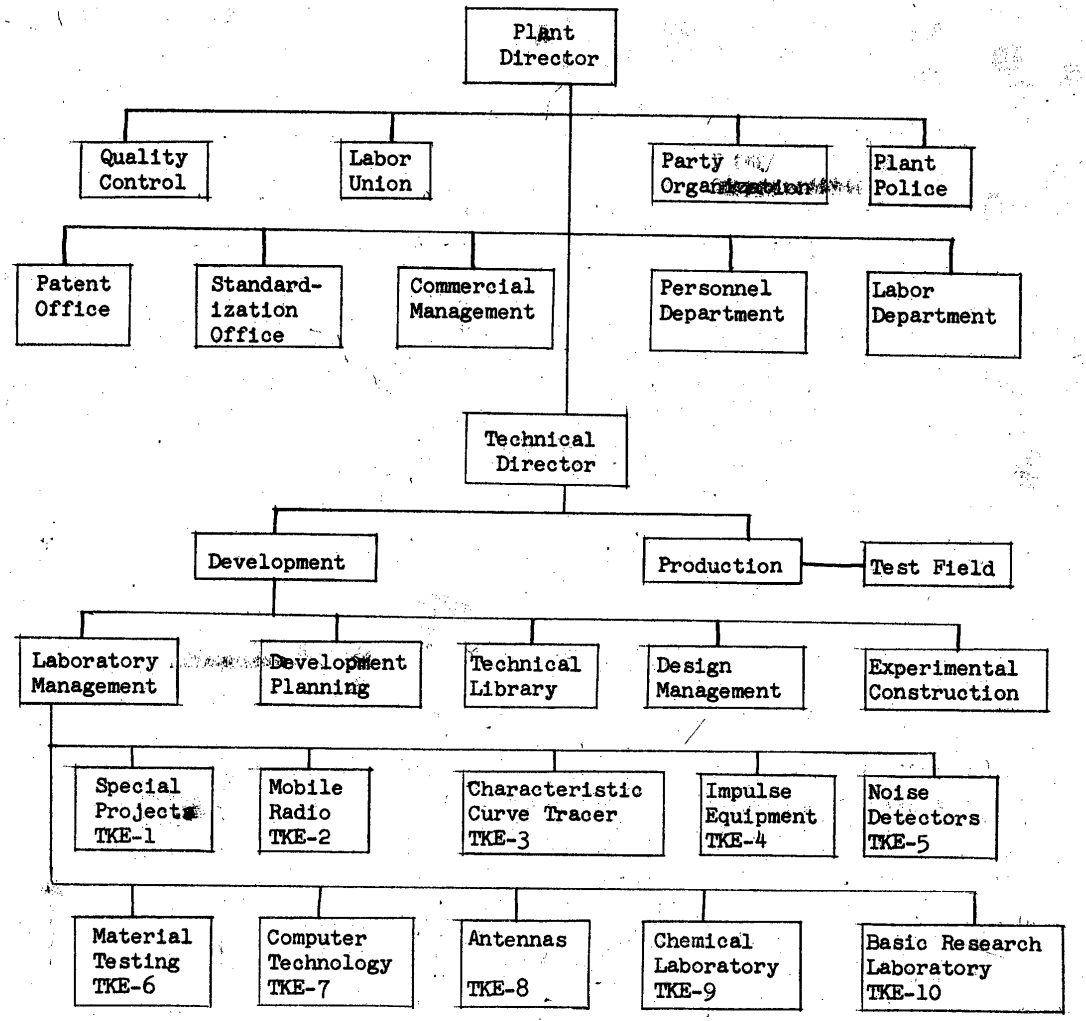
Railroad Communications Mobile Equipment



1. Transmitter
2. Power supply
3. Receiver
4. Controls
5. Foot pedal
6. Pressure chamber speaker
7. Control panel
8. Pedal switch

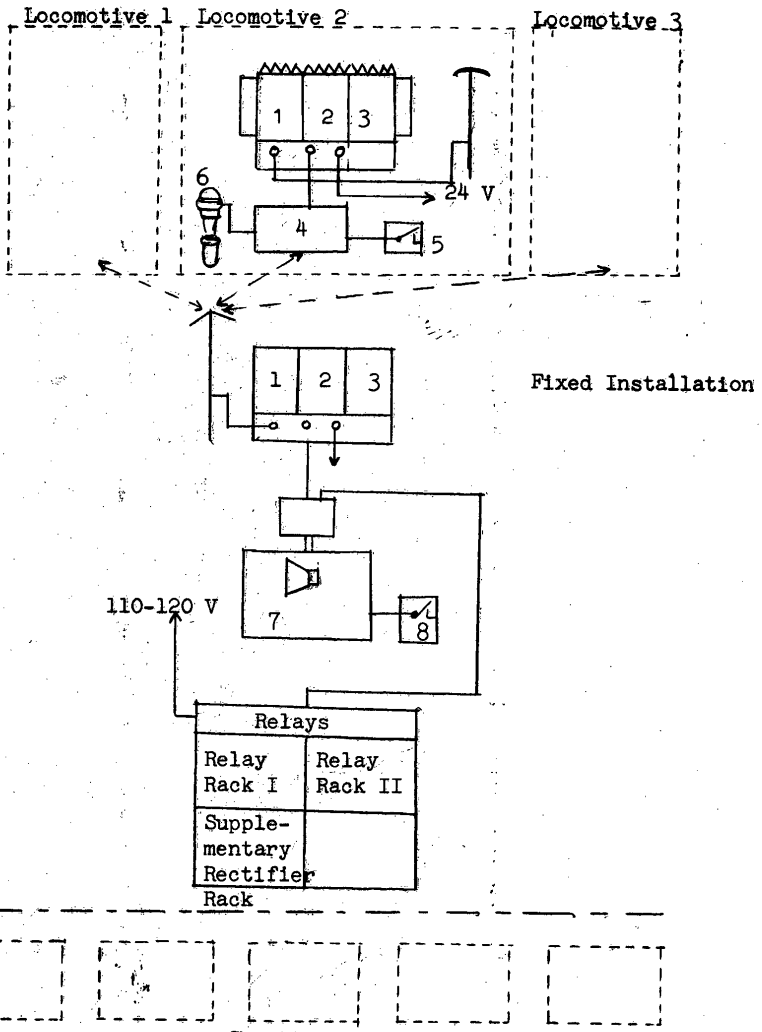
ATTACHMENT A

Organization of the Dresden Radio Plant



ATTACHMENT B

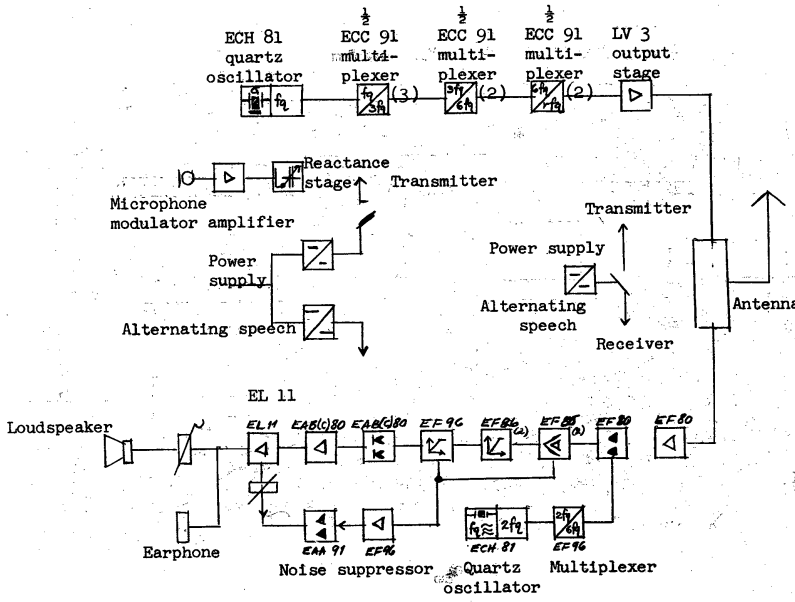
Railroad Communications Mobile Equipment



1. Transmitter
2. Power supply
3. Receiver
4. Controls
5. Foot pedal
6. Pressure chamber speaker
7. Control panel
8. Pedal switch

ATTACHMENT C

Railroad Communications Mobile Equipment



EL 11	Low-frequency amplifier
EAB(C) 80	Discriminator
EAB(C) 80	Limiter
EF 96	Intermediate-frequency amplifier
EF 96	Mixing stage
EF 85	High-frequency stage
EF 80	
EF 80	

S-E-C-R-E-T

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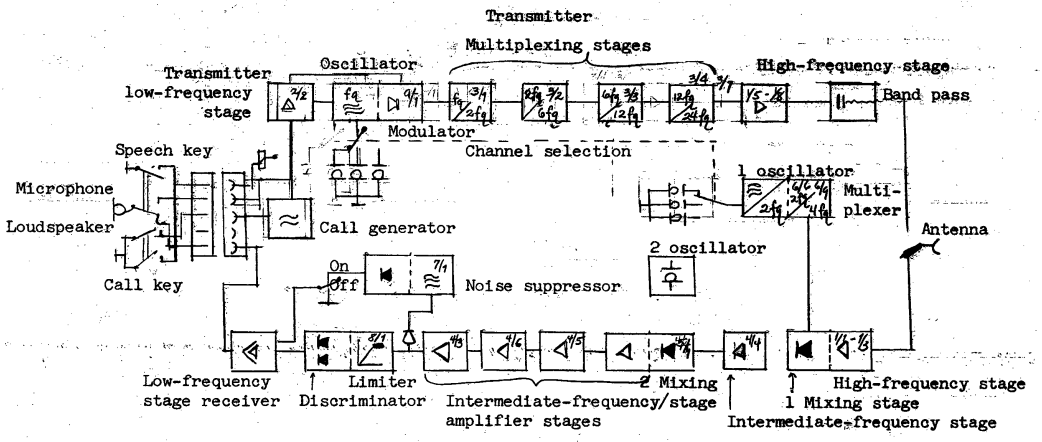
S-E-C-R-E-T

50X1-HUM

ATTACHMENT D

Block Diagram of Transceiver



Receiver

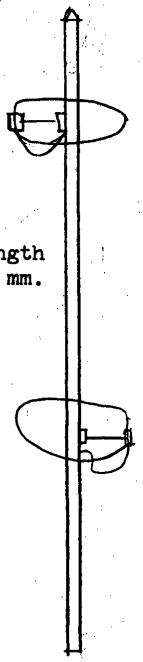
50X1-HUM

50X1-HUM

ATTACHMENT E

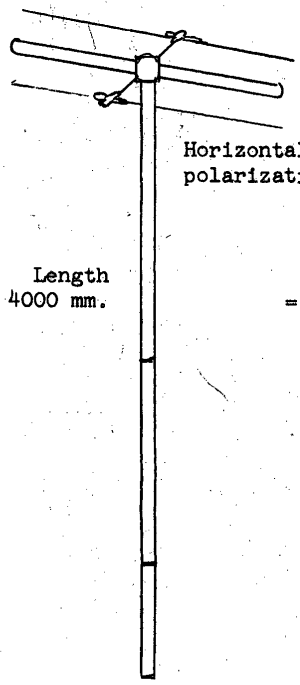
Antennas Made at the Dresden Radio Plant

Horizontal Polarization
Stacked Ring Dipole



Length
= 3500 mm.

Horizontal Polarization
Dipole



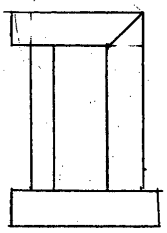
Length
= 4000 mm.

Vertical Polarization
Dipole

Length
= 2800 mm.

Length
800 mm.

Vertical Polarization
λ /4 Emitter

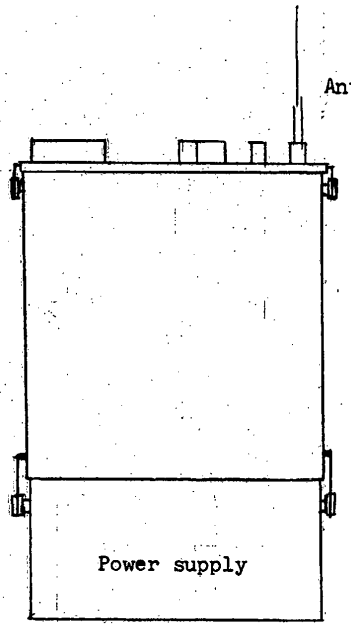


Length
= 500 mm.

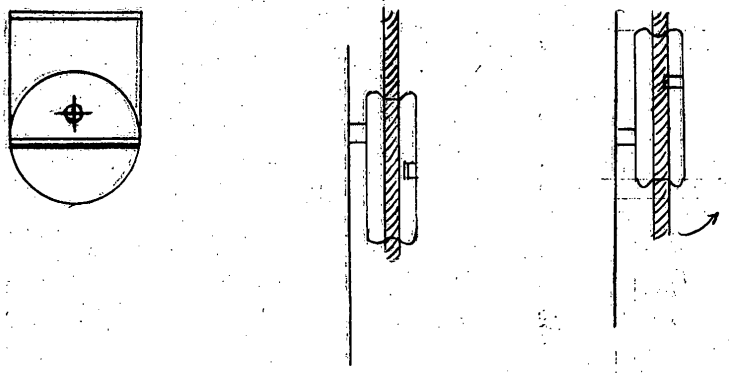
Vertical Polarization
Locomotive Antenna

ATTACHMENT F

Fu 0.25 Portable Transceiver

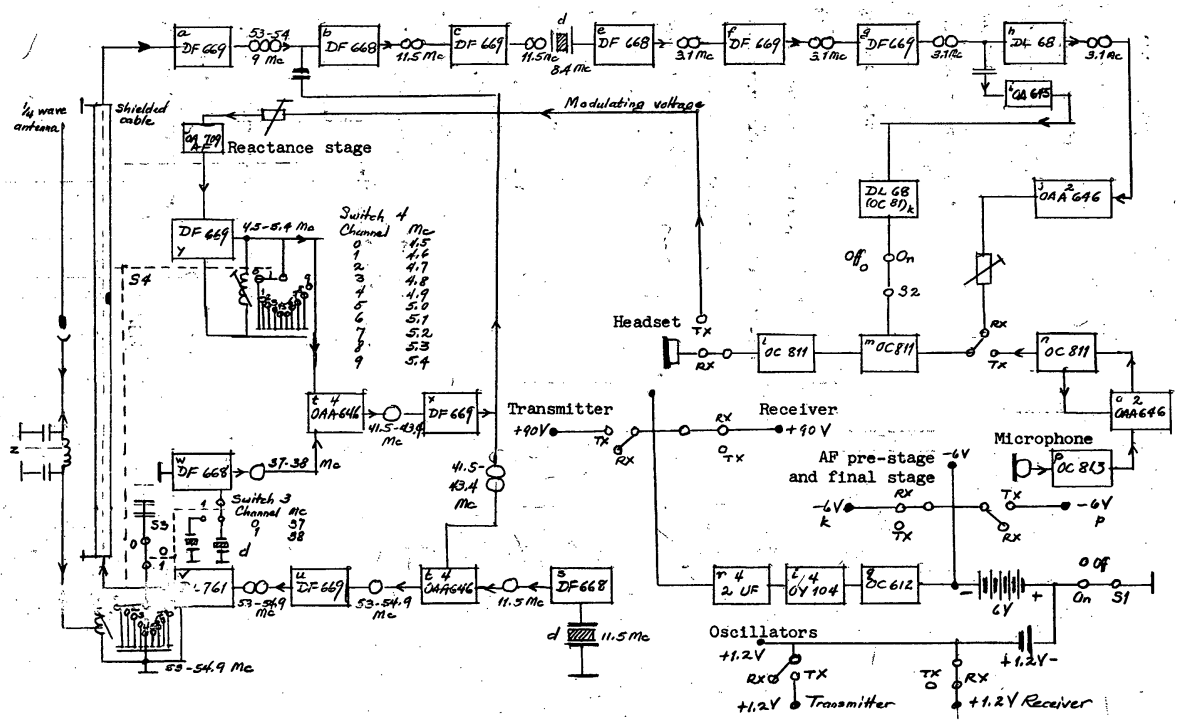


Locking Device



ATTACHMENT G

Block Diagram of FU-0.25 Transceiver



S-E-C-R-E-T

S-E-C-R-E-T

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50X1-HUM

ATTACHMENT G

Legend

a. Radio-frequency stage.

b. First mixer.

c. First intermediate-frequency stage.

d. Crystal.

e. Second mixer.

f. Second intermediate-frequency stage.

g. Third intermediate-frequency stage.

h. Limiter.

i. Rectifier.

j. Phase discriminator.

k. Noise limiter.

l. Final AF stage.

m. Pre-AF stage.

n. Frequency limiter.

o. Microphone preamplifier.

p. Microphone amplifier frequency limiter.

q. Direct-current transverter.

r. Filter.

s. Frequency transmitter.

t. Ring modulator.

u. Pretransmitter stage.

v. Transmitter stage.

w. Crystal oscillator.

x. Oscillator amplifier.

y. LC oscillator.

z. Collins filter.